West Kirby Grammar School

Curriculum Map – Year 7 - Mathematics

Topic Name	Term	Skills Developed	Link to NC Subject Content	Next link in curriculum	Other Notes
Induction Lessons	Autumn	• Students will develop study skills and routines suitable for secondary mathematics • Consolidate their numerical and mathematical capability from Key Stage 2	• Understand and use place value for decimals, measures and integers of any size • Use the four operations, including formal written methods, applied to integers, decimals • Use integer powers and associated real roots (square, cube and higher), recognise powers of 2, 3, 4, 5	• Year 7 Autumn – Axioms and Arrays	KEY* Number Geometry Ratio and Proportion Algebra Statistics
Axioms and Arrays	Autumn	• Begin to reason deductively in geometry, number and algebra, including using geometrical constructions • Interpret when the structure of a numerical problem requires additive, multiplicative or proportional reasoning	• Appreciate the infinite nature of the sets of integers, real and rational numbers • Interpret mathematical relationships both algebraically and geometrically	• Year 7 Autumn – Factors, Multiples and Order of Operations	
Angles	Autumn	• Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems	• Apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles • Understand and use the relationship between parallel lines and alternate and corresponding angles	• Year 7 Spring – Classifying 2-D Shapes	
Factors, Multiples and Order of Operations	Autumn	• Select and use appropriate calculation strategies to solve increasingly complex problems	• Use the concepts and vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, highest common factor and lowest common multiple • Use conventional notation for the priority of operations, including brackets, powers, roots and reciprocals	• Year 7 Autumn – Equations and Inequalities • Year 7 Summer – Prime Factor Decomposition	

Positive and negative numbers	Autumn	• Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems	• Order positive and negative integers, decimals and fractions; use the number line as a model for ordering of the real numbers; use the symbols $=, \neq, <, >, \leq, \geq$	• Year 7 Autumn – Equations and Inequalities	
Equations, expressions and Inequalities	Autumn	• Substitute values in expressions, rearrange and simplify expressions, and solve equations • Use algebra to generalise the structure of arithmetic, including to formulate mathematical relationships	• Use conventional notation for the priority of operations, including brackets, powers, roots and reciprocals • Recognise and use relationships between operations including inverse operations • Use and interpret algebraic notation • Understand and use the concepts and vocabulary of expressions, equations, inequalities, terms and factors	• Year 8 Autumn – Forming and Solving Equations and Inequalities*	
Fractions 1 and 2	Spring	• Develop their use of formal mathematical knowledge to interpret and solve problems	• Work interchangeably with terminating decimals and their corresponding fractions • Express one quantity as a fraction of another, where the fraction is less than 1 and greater than 1	• Year 7 Summer – Fractions 3, 4 and 5	
Classifying 2-D Shapes	Spring	• Make and test conjectures about patterns and relationships; look for proofs or counter-examples	• Derive and illustrate properties of triangles, quadrilaterals, circles, and other plane figures [for example, equal lengths and angles] using appropriate language and technologies	• Year 7 Spring – Constructing Triangles and Quadrilaterals	
Constructing Triangles and Quadrilaterals	Spring	• Begin to reason deductively in geometry, number and algebra, including using geometrical constructions	• Draw and measure line segments and angles in geometric figures, including interpreting scale drawings • Use the standard conventions for labelling the sides and angles of triangle ABC, and know	• Year 7 Spring – Area of 2-D Shapes	

			and use the criteria for congruence of triangles • Identify and construct congruent triangles		
Coordinates	Spring	• Begin to reason deductively in geometry, number and algebra, including using geometrical constructions	• Work with coordinates in all four quadrants	• Year 7 Summer – Transforming 2-D Figures	
Ratio	Spring	• Develop their use of formal mathematical knowledge to interpret and solve problems	• Use ratio notation, including reduction to simplest form • Divide a given quantity into two parts in a given part:part or part:whole ratio; express the division of a quantity into two parts as a ratio • Understand that a multiplicative relationship between two quantities can be expressed as a ratio or a fraction	• Year 8 Autumn – Ratio, Real Life Graphs and Rate	
Percentages	Spring	• Use language and properties precisely to analyse numbers	• Define percentage as 'number of parts per hundred', interpret percentages and percentage changes as a fraction or a decimal, interpret these multiplicatively, express one quantity as a percentage of another, compare two quantities using percentages, and work with percentages greater than 100% • Interpret fractions and percentages as operators	• Year 8 Spring – Percentages (Growth and Decay)	
Area of 2-D Shapes	Summer	• Begin to reason deductively in geometry, number and algebra, including using geometrical constructions	• Change freely between related standard units [for example time, length, area, volume/capacity, mass] • Derive and apply formulae to calculate and solve problems involving: perimeter and area of triangles, parallelograms, trapezia	• Year 8 Autumn – Circles and Composite Shapes	

Fractions 3, 4 and 5	Summer	• Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems	• Use the four operations, applied to proper and improper fractions, and mixed numbers, all both positive and negative	• Year 8 Autumn – Forming and Solving Inequalities	
Prime Factor Decomposition	Summer	• Develop their use of formal mathematical knowledge to interpret and solve problems	• Use the concepts and vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple, prime factorisation, including using product notation and the unique factorisation property	• Further work in KS4 – Factors and Multiples	
Transforming 2-D Figures	Summer	• Begin to reason deductively in geometry, number and algebra, including using geometrical constructions	• Identify properties of, and describe the results of, translations, rotations and reflections applied to given figures	• Year 8 Autumn – Ratio • Further work in KS4 – Vectors	

* Throughout the entire curriculum, content and skills are revisited and reused continuously. The colour code refers to the main strand each topic falls under.